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Brit. 8,673 Apr. 24, 1896

Thompson

Compl. Spec.

BRITISH

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160.45

A.D. 1896. APRIL 24. N°. 8673.

THOMPSON'S C[illegible] SPECIFIC[illegible]

Dup. Spec. 786,188 of 1896.

Fig. 8

Fig. 6

Fig. 5

Fig. 3

Fig. 4

Fig. 7

Fig. 1

(2 sheets)

adjusts worm when adapted for use in Fig. 2

Worm adjusts when used in Fig. 1

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115-45

115. MARINE ... Screw Propellers, &c. Adjustable-blades.

(2 sheets)
sheet 2

Fig. 9

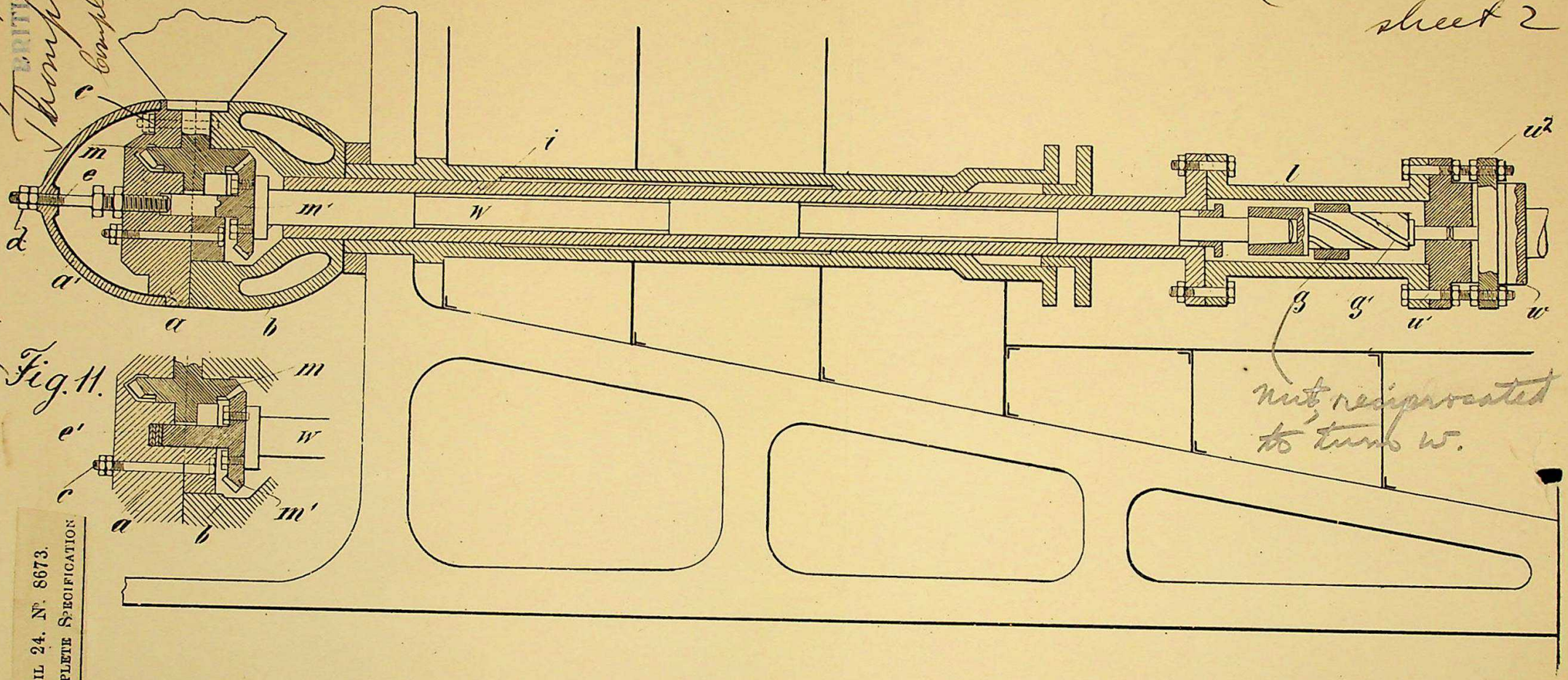

Fig. 11.

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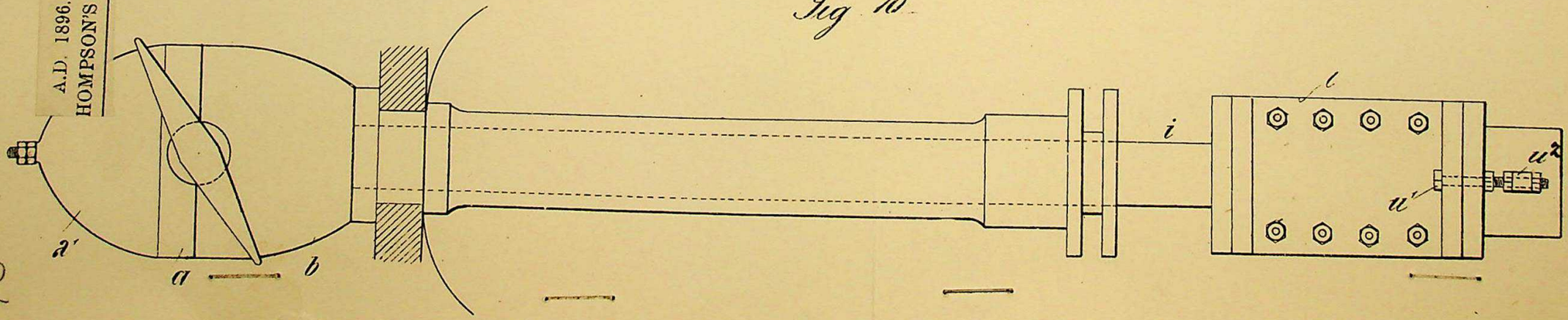
HOMPSON'S Complete Specification

Fig 10



Screw Propellers
Adjustable Blades

22

N° 8673 A.D. 1896

Date of Application, 24th Apr., 1896
Complete Specification Left, 29th Oct., 1896—Accepted, 20th Feb., 1897

PROVISIONAL SPECIFICATION.

Improvements in or connected with Ships' Propellers.

DUPLICATE

A communication by HEINRICH BRINKMANN, of 12 Wörthstrasse, Munich, in the Empire of Germany, Merchant.

I, WILLIAM PHILLIPS THOMPSON F.C.S., M.I.M.E., of The Agency for Foreign Patent Solicitors, 6 Lord Street, Liverpool, and 6, Bank Street, Manchester, both in the County of Lancaster, 118 New Street, Birmingham in the County of Warwick and 322 High Holborn in the County of Middlesex, Civil Engineer, do hereby declare the nature of this invention to be as follows :—

This invention has for its object an arrangement of bosses in two parts for ships' propellers with adjustable or feathering blades, which arrangement allows of a drawing together of the two parts of the boss on the axes of the blades becoming loose even when at sea and especially under water, without it being necessary, as hitherto, to remove a portion of the boss, and without it being possible for water, sand or other like impurities to penetrate into the hollow part of the boss in which the adjusting mechanism is placed. This has the advantage that all the drawbacks resulting from the axes of the blades becoming loose, such for instance as the screw or the adjusting or feathering mechanism becoming useless or breaking, can be immediately removed or prevented, and thus the removal of such drawbacks need not be delayed until the ship enters dry dock.

The double conical socket pins of the blades are provided with bevel wheels, which engage with a similar wheel on the ship's shaft. The latter is constructed in a hollow shaft which carries the boss or nave of the propeller blades and is set in rotation by the ship's engine. A nut is adjustably mounted on the shaft and engages at a pitch of from 45°—60° in a thread formed on the said shaft. Nut and thread are enclosed by two connecting casings on the engine shaft, which are connected with the hollow shaft and with the rear part of the ship's engine shaft respectively, by means of bolts on the ends or on the outer periphery of said casing. The latter form of construction (*i.e.*, with the bolts on the periphery) appears very advantageous, more particularly for large ships, because in this case when mounting or repairing, it is not necessary to push sideways the propeller or ship's shaft, as the coupling casings only need be shifted or removed sideways for the same purpose.

Further, a sheath or casing is adjustably mounted on the ship's engine shaft and is connected with the before mentioned nut by means of two bars which are guided in a coupling, or by means of a sliding wedge in said sheath.

The sheath is provided with a neck, over which, in the case of small ships, a lever directly operated from the officer's bridge for the purpose of adjusting or feathering the blades engages, which lever, in the case of large ships, is operated by means of air pressure by a special apparatus. If the nut be pushed on the thread, say to the left, by means of this lever and the bars, the inner shaft will be turned 90°—120° according to the adjustment of the stroke, and thereby, in consequence of the bevel gearing, the blades will be adjusted to an equal extent.

If by long use the inner shaft should become loose, and thereby too great a play result between the bevel wheels, which might affect the proper working of the

[*Price* 8*d.*]

arrangement when adjusting the blades, the inner shaft may, by means of a wedge behind the end of the shaft and a screw mounted in the boss or nave of the blades, be easily so regulated that the bevel wheels again stand in correct engagement with one another. The nut may also correspondingly be adjusted or regulated by the adjustment of the screw-threaded rods which connect the nut with the engine shaft. The wedge may be replaced by two pressure screws mounted in the coupling, and also a disc or other suitable adjusting or setting device.

In a modification of the invention the two parts of the boss may be held together by screw bolts instead of by means of a tightening clamp or stirrup, and on the pins of the blades becoming loose may be drawn together. These bolts and generally also the adjusting screws are enclosed by means of a cap, which is retained on the outer part of the boss by means of nuts mounted on the adjusting screws.

The wedge is here replaced by a strong bolt, which is passed transversely through the engine shaft and by means of which the inner shaft may be adjusted against the endmost part of the boss by screw bolts.

The end adjusting screw may also be replaced by discs, which are inserted in suitable numbers and thickness in the hollow of the endmost part of the boss between the latter and the inner shaft.

Dated this 23rd day of April 1896.

W. P. THOMPSON & Co.,
Agents.

COMPLETE SPECIFICATION.

Improvements in or connected with Ships' Propellers.

A communication by HEINRICH BRINKMANN, of 12 Wörthstrasse, Munich, in the Empire of Germany, Merchant.

I, WILLIAM PHILLIPS THOMPSON F.C.S. M.I.M.E. of The Agency for Foreign Patent Solicitors 6 Lord Street, Liverpool, and 6 Bank Street, Manchester both in the County of Lancaster, 118 New Street Birmingham in the County of Warwick and 322 High Holborn in the County of Middlesex, Civil Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

This invention has for its object an arrangement of bosses in two parts for ships' propellers with adjustable or feathering blades, which arrangement allows of a drawing together of the two parts of the boss on the axes of the blades becoming loose even when at sea and especially under water, without it being necessary, as hitherto, to remove a portion of the boss, and without it being possible for water, sand or other like impurities to penetrate into the hollow part of the boss in which the adjusting mechanism is placed. This has the advantage that all the drawbacks resulting from the axes of the blades becoming loose, such for instance as the screw or the adjusting or feathering mechanism becoming useless or breaking, can be immediately removed or prevented, and thus the removal of such drawbacks need not be delayed until the ship enters dry dock.

In the accompanying drawings,

Figure 1 shows an elevation partly in section of this improved arrangement ;

Figure 2 is a cross section on the line I—I ;

Figure 3, a similar section on the line II—II ;

Figure 4 the same on the line III—III ;

Figures 5, 6, 7, 8 and 11 show other forms of construction of details ; whilst

Figures 9 and 10 are a longitudinal section and plan view respectively of another form of construction of the whole arrangement.

As shown in Figure 1, the double conical socket pins of the blades are provided with bevel wheels m which engage with a similar wheel m^1 on the ship's shaft w. The latter is constructed in a hollow shaft i which carries the boss or nave b of the propeller blades and is set in rotation by the ship's engine. A nut g is adjustably mounted on the shaft w and engages at a pitch of from 45°—60° in a thread g^1 formed on the said shaft. Nut and thread are enclosed by two connecting casings l on the engine shaft, which, as shown in Figure 1, are connected with the hollow shaft i and with the rear part of the ship's engine shaft w^1 respectively, by means of bolts on the ends or in the modification shown in Figures 5 and 6 on the outer periphery of said casings. The latter form of construction (that is with the bolts on the periphery) appears very advantageous, more particularly for large ships, because in this case when mounting or repairing, it is not necessary to push sideways the propeller or ship's shaft, as the coupling casings only need be shifted or removed sideways for the same purpose.

Further, a sheath or casing h is adjustably mounted on the ship's engine shaft w^1 and is connected with the before mentioned nut g by means of two bars h^1 which are guided in a coupling q or by means of a sliding wedge in said sheath h.

The sheath h is provided with a neck o over which, in the case of small ships, a lever directly operated from the officer's bridge for the purpose of adjusting or feathering the blades, engages, which lever, in the case of large ships, is operated by means of air pressure by a special apparatus. If the nut g be pushed on the thread g^1 say to the left (in the direction of the arrow) by means of this lever and the bars h^1, the inner shaft w will be turned 90°—120° according to the adjustment of the stroke, and thereby, in consequence of the bevel gearing m m^1, the blades will be adjusted to an equal extent.

If by long use the inner shaft w should become loose, and thereby too great a play result between the bevel wheels m m^1 which might affect the proper working of the arrangement when adjusting the blades, the inner shaft w may, by means of a wedge u behind the end of the shaft w and a screw e mounted in the boss or nave of the blades, be easily so regulated that the bevel wheels again stand in correct engagement with one another. The nut g may also correspondingly be adjusted or regulated by the adjustment of the screw-threaded rods s which connect the nut with the engine shaft. The wedge u may as shown in Figure 7 elevation and Figure 8 cross section be replaced by two pressure screws u mounted in the coupling g and also a disc or other suitable adjusting or setting device.

In the modification of the invention, shown in Figures 9 and 10, the two parts a b of the boss may be held together by screw bolts c instead of by means of a tightening clamp or stirrup, as in Figure 1, and on the pins of the blades becoming loose may be drawn together. These bolts c and generally also the adjusting screws e are enclosed by means of a cap a^1 which is retained on the outer part a of the boss by means of nuts d mounted on the adjusting screws e.

The wedge u is here replaced by a strong bolt u^2 which is passed transversely through the engine shaft w^1 and by means of which the inner shaft w may be adjusted against the endmost part e of the boss by screw bolts u^1.

The end adjusting screw e may also, as shown in Figure 11, be replaced by discs e^1 which may be inserted in suitable numbers and thickness (according to the adjustment required) in the hollow of the endmost part a of the boss between the latter and the inner shaft w, to receive the thrust of the latter, and prevent the bevel wheels being jammed.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, as communicated to me by my foreign correspondent, I declare that what I claim is :—

1. A propeller shaft with an arrangement for feathering and adjusting th

blades of the propeller characterised by the endmost half (*a*) of the divided boss of the propeller being adapted (on the pins of the blades becoming loose) to be drawn to the front half (*b*) of the boss by means of a central screw (*e*) which is mounted in a bent piece (*c*) connected with the front half (*b*) of the boss, without its being necessary to remove a part of the ship's propeller, whilst by means of a wedge (*u*) any play between the bevel wheels of the shaft and those of the propeller resulting from the drawing together may be adjusted substantially as described.

2. A form of construction of the propeller shaft herein described, in which the play between the bevel wheels (m m^1) on the propeller blade pins becoming loose, may be regulated, instead of by means of the screw (*e*), by means of insertion discs (e^1) at one end and a bolt (u^2) at the other end, whilst the two parts (*a b*) of the boss are drawn together by means of screw bolts (*c*) substantially as described.

3. A form of construction of the propeller shaft herein described, characterised by the alteration in the pitch of the blades due to the adjustment or displacement of the shaft (*w*) by means of the screw (*e*) or insertion discs (e^1) and the wedge or bolt (*u*), being capable of being equalised by an adjustment of the nut (*g*) on the shaft (*w*) by a tightening or alteration of nuts (*s*) on the coupling bars substantially as described.

Dated this 28th day of October 1896.

WM. P. THOMPSON & Co.,
Agents.

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